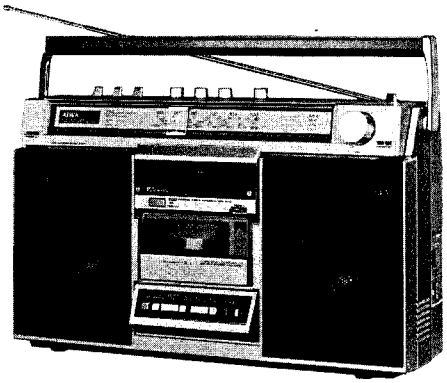
4-BAND STEREO RADIO CASSETTE RECORDER

MODEL NO. CS-660E,K

AIWA®

[SERVICE MANUAL]

Code No. 29-660-000-18



DATE OF ISSUE 9/1981

SPECIFICATIONS

GENERAL

Semiconductors:	6 ICs, 1 FET, 35 transistors, 24 diodes, 3 LED's
Power source:	Batteries DC 12V (UM-1 x 8) E model AC 110 ~ 120V/220 ~ 240V switchable 50/60 Hz K model AC 120V/240V switchable 50/60 Hz Car battery (thru car adaptor)
Power consumption:	16 W
Speakers:	160mmφ x 2 50mmφ x 2
Dimension:	556(W) x 330(H) x 185.5(D) mm
Weight:	7 kg
Supplied accessories:	AC power cord x 1 Cassette tape x 1

RADIO SECTION

Circuit:	Superheterodyne
Frequency range:	FM 87.4 ~ 108.3 MHz SW 5.8 ~ 18.5 MHz MW 515 ~ 1,650 kHz LW 145 ~ 320 kHz
Intermediate frequency:	FM 10.7 MHz SW, MW, LW 468 kHz
Sensitivity:	
(IHF, THD 3%)	FM 7 ± 3 dB (at 88 MHz) 10 ± 3 dB (at 98 MHz) 13 ± 3 dB (at 108 MHz)
(S/N 10 dB)	SW 35 ± 4 dB (at 5.9 MHz) 18 ± 4 dB (at 12.0 MHz) 12 ± 4 dB (at 18.0 MHz)
(S/N 10 dB)	MW 38 ± 4 dB (at 600, 1,000, 1,400 kHz)
(S/N 10 dB)	LW 47 ± 4 dB (at 150 kHz) 44 ± 4 dB (at 200 kHz) 42 ± 4 dB (at 300 kHz)
Image rejection:	FM 37 ± 4 dB (at 108.0 MHz) SW 12 ± 6 dB (at 18.0 MHz) MW 42 ± 4 dB (at 1,400 kHz) LW 46 ± 4 dB (at 300 kHz)
IF rejection:	FM 80 ± 6 dB (at 88.0 MHz) MW 31 ± 3 dB (at 600 kHz)

TAPE RECORDER SECTION

Tape speed:	4.8 cm/s. ± 2 %
Recording system:	AC bias
Erasing system:	AC erase
Record bias frequency:	61 ± 0.5 kHz
Distortion:	1.5 ± 0.5% (PB) 1.5 ± 0.5% (REC/PB)
Frequency response:	METAL tape: 50 ~ 14,000 Hz CrO_2 tape 50 ~ 13,000 Hz LH tape 50 ~ 12,500 Hz
Signal to noise ratio: (Un-weighted)	54/50 ± 3 dB [DC/AC] (PB) 48/44 ± 3 dB [DC/AC] (REC/PB)
Erasing ratio:	More than 60 dB
Separation:	More than 39 dB (REC/PB)
Maximum output power:	5.0W + 5.0W
FF & rewind time:	90 ± 5 s. (at C-60)
Automatic stop system:	Mechanical auto stop
Pinch roller pressure:	125 ± 15 g (1.23 ± 0.15N)
Wow and flutter:	Less than 0.038% (WRMS)
Take-up torque:	35^{+15}_{-5} g-cm (343^{+147}_{-49} mN·m)
FF & rewind torque:	110 ± 20 g-cm (1078 ± 196 mN·m)

- Specifications and external appearance are subject to change without notice due to product improvement.

DISASSEMBLY INSTRUCTIONS

Removing the Back Cover

1) Remove 8 screws. (see figure 1)

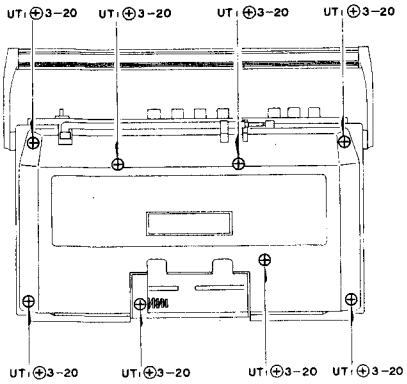


Figure 1

Removing the Radio Shassis

1) Remove 9 knobs. (see figure 2)

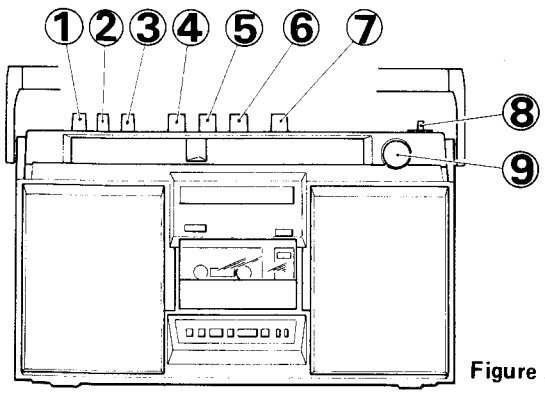


Figure 2

2) Open the cassette lid. (See figure 3)

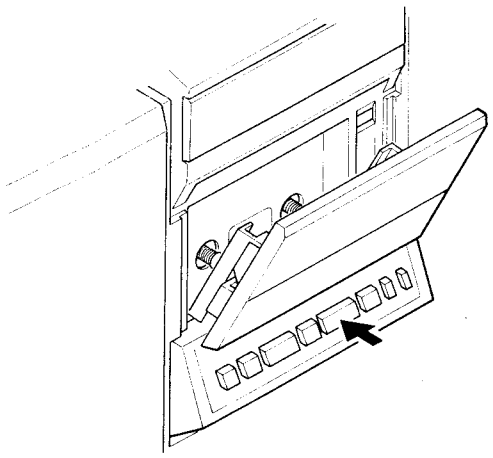


Figure 3

3) Remove 5 screws. (see figure 4)

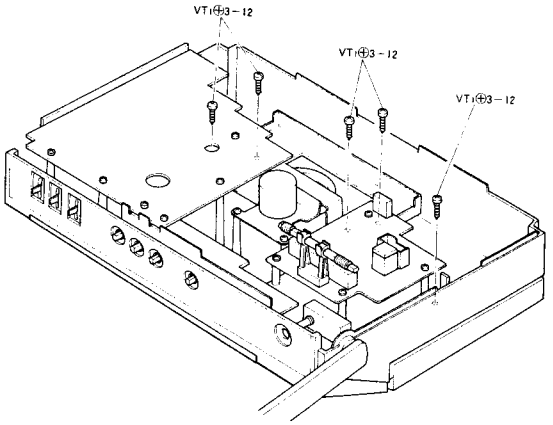


Figure 4

Removing the Main Circuit Board

1) Remove 6 screws. (see figure 5)

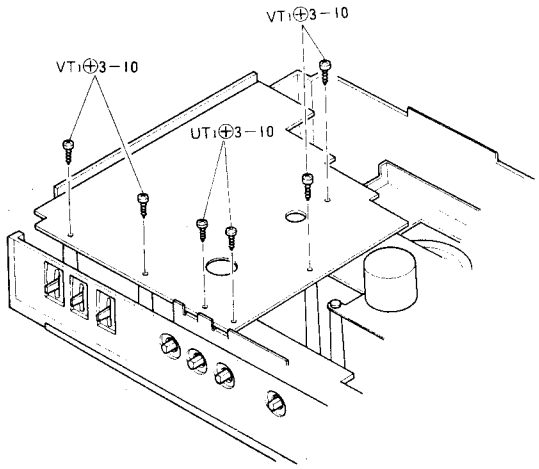


Figure 5

Removing the Tuner Circuit Board

1) Remove 5 screws. (see figure 6)

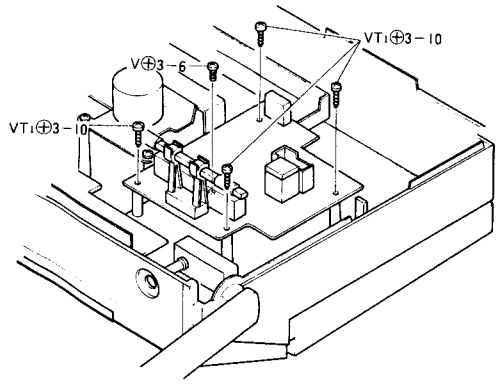


Figure 6

Removing the Mechanism

1) Remove **6** screws. (see figure 7)

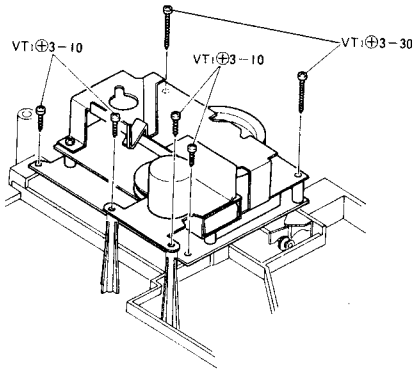
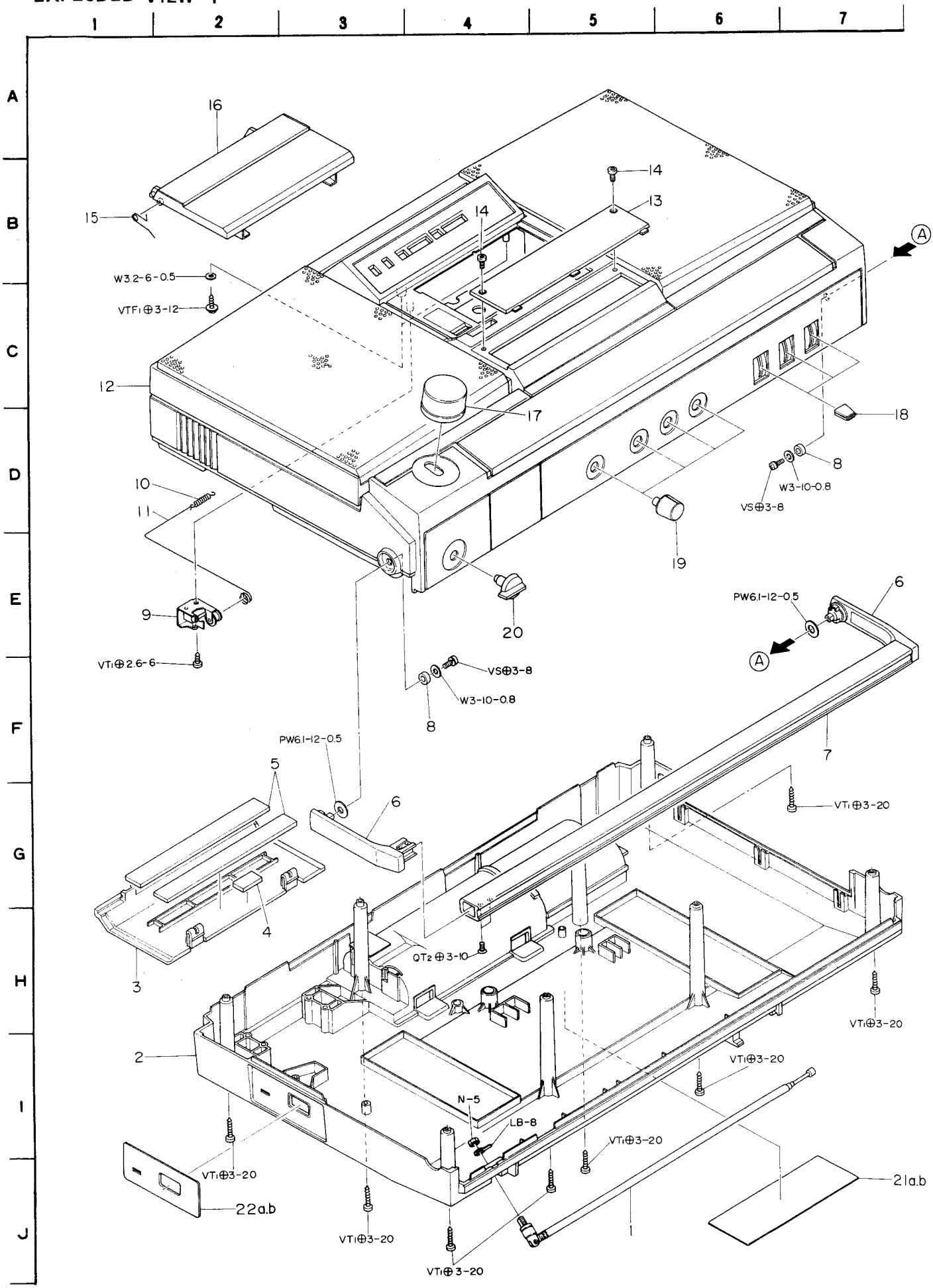


Figure 7

EXPLODED VIEW–1



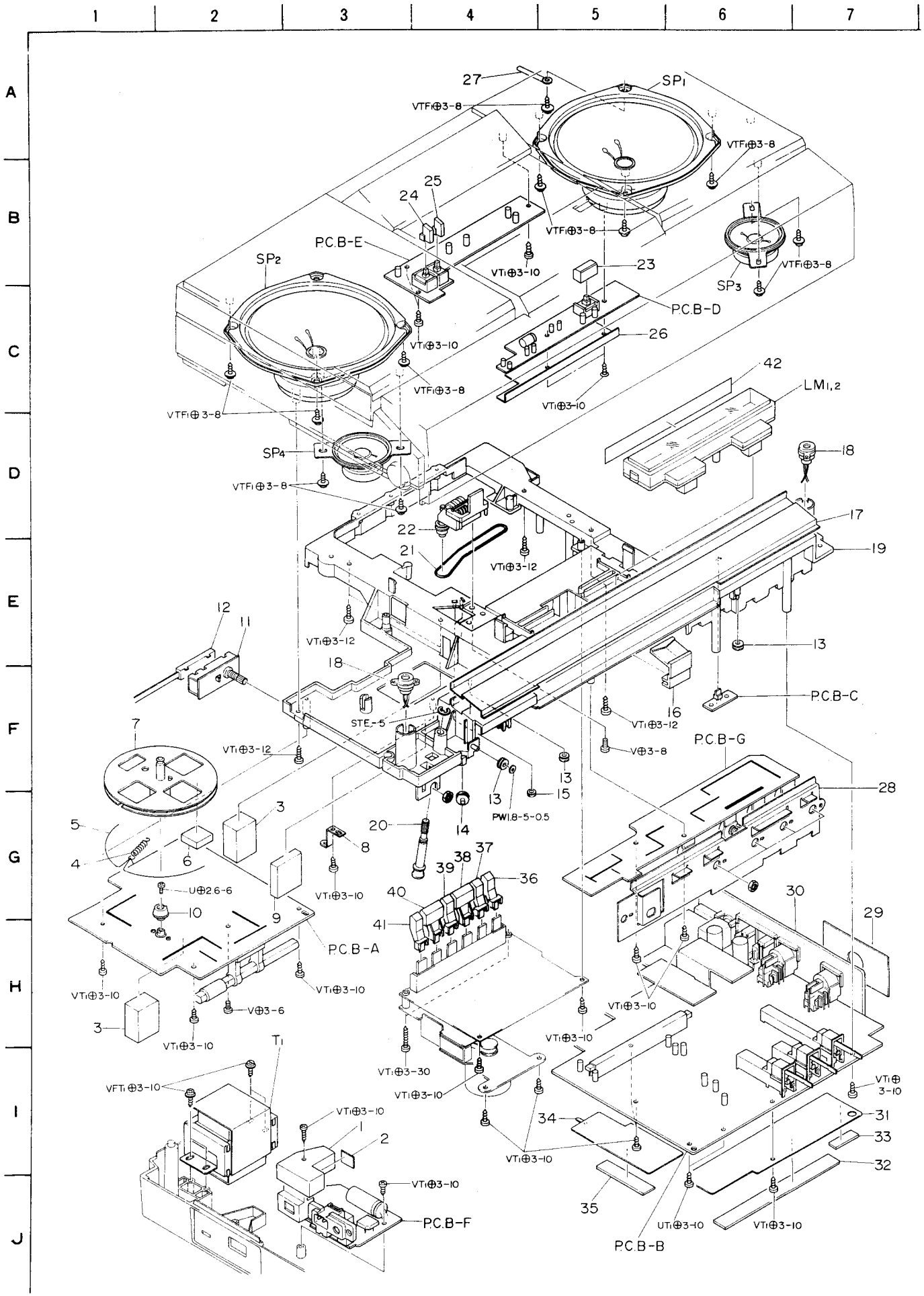
PARTS LIST

MECHANICAL PARTS

■ * mark in this part list shows exclusive part.

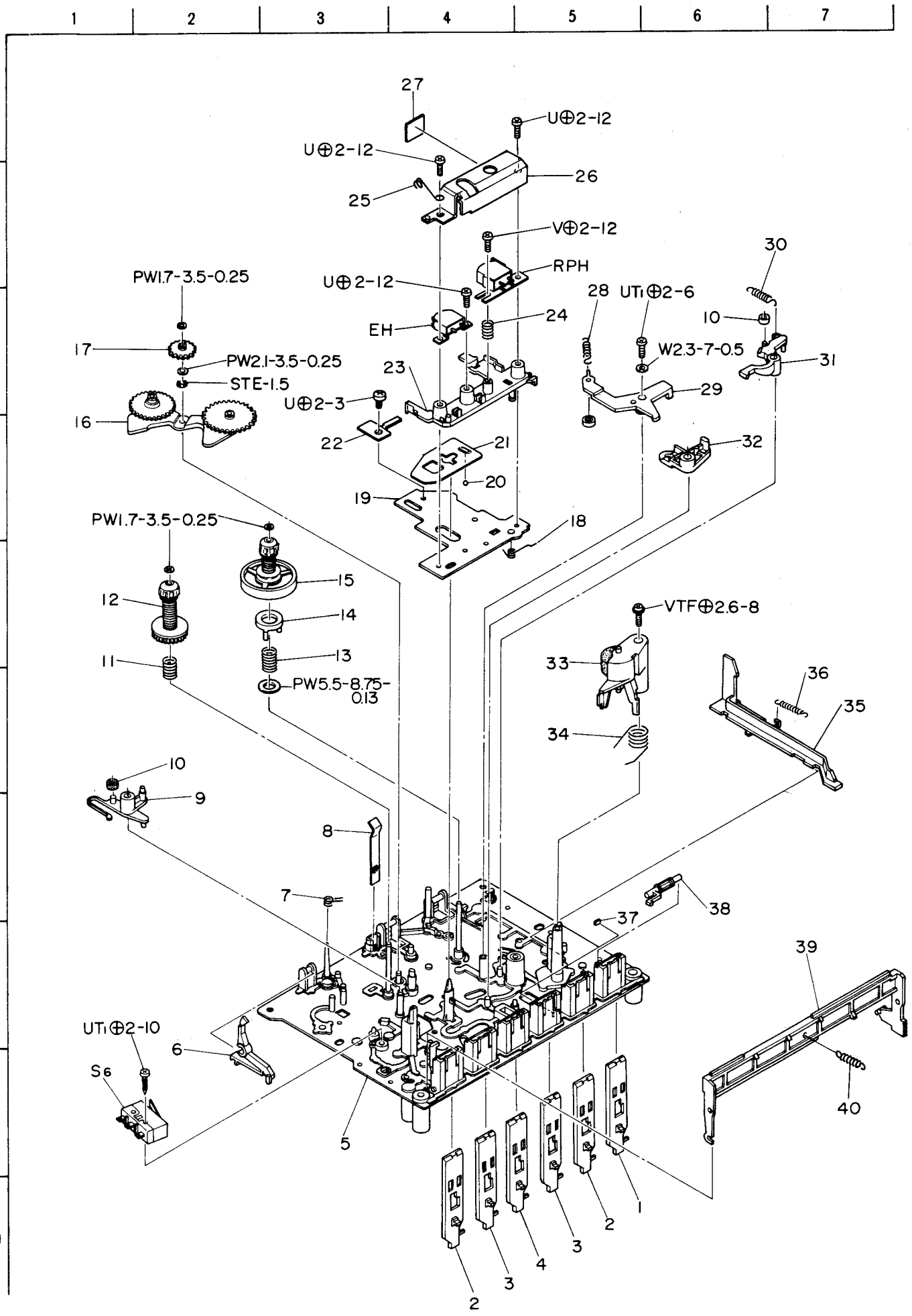
Ref No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1-1	87-043-049-01		Whip antenna		1
1-2	09-017-861-01		Back cover ass'y	*	1
	82-571-002-01		Back cover	TPR-968	1
	82-563-213-01		Battery case	TPR-990	1
	82-222-036-01		Spring, Battery		2
	82-551-213-01		Battery contact		1
	82-551-248-01		Fibre 24-31		1
	87-038-032-01		Terminal plate, Battery		2
	87-351-097-01		VT_1 + 3 - 12		2
1-3	82-571-018-01		Battery room lid	TPR-968	1
1-4	87-063-116-01		Cushion 30-15		1
1-5	82-563-280-01		Cushion, Battery lid	TPR-990	2
1-6	82-571-036-01		Handle arm	TPR-968	2
1-7	82-571-037-01		Handle grip	TPR-968	1
1-8	82-571-234-01		Felt, Handle	TPR-968	2
1-9	87-078-003-01		Air damp unit ass'y		1
1-10	82-563-247-01		E-spring, Air damp	TPR-990	1
1-11	87-096-045-01		String, Tuning dial		1
1-12	09-017-863-01		Main cabinet ass'y	*	1
	82-592-029-01		Main cabinet	*	1
	82-592-037-01		Dial window	*	1
	82-592-013-01		Panel-control	*	1
	82-592-014-01		Panching, Speaker L	*	1
	82-592-015-01		Panching, Speaker R	*	1
	82-592-034-01		Name, Window A	*	1
	82-592-035-01		Name, Window B	*	1
	82-592-036-01		Name, Window C	*	1
	82-648-025-01		Plate, Cassette	HS-F1	1
	82-641-228-01		Sheet, Nylon 12 - 3 - 0.3	TP-S30	8
	87-321-074-01		QT_1 + 2.6 - 8		4
1-13	82-592-030-01		Window, Meter	*	1
1-14	82-571-025-01		Screw, Decorative	TPR-968	2
1-15	82-587-218-01		T-spring, Cassette lid	CS-880	1
1-16	09-017-862-01		Cassette lid ass'y	*	1
	82-592-002-01		Cassette lid	*	1
	82-592-003-01		Cassete box	*	1
	82-592-032-01		Panel, Cassette lid H	*	1
	87-063-121-01		Rubber cushion 5-5-0.5		1
	82-592-202-01		Spring, Cassette L	*	1
	82-592-203-01		Spring, Cassette R	*	1
	87-341-096-21		UT_1 + 3 - 10		2
	87-351-072-21		VT_1 + 2.6 — 5		2
1-17	82-571-041-01		Knob Tuning	TPR-968	1
1-18	82-570-009-01		Knob, Toggle		3
1-19	82-587-017-01		Knob	CS-880	4
1-20	82-562-051-01		Knob Band	TPR-926A	1
1-21a	82-592-023-01		Name plate, Spec. (E model only)	*	1
1-21b	82-592-024-01		Name plate, Spec. (K model only)	*	1
1-22a	82-571-032-01		Jack plate, AC (E model only)	TPR-968	1
1-22b	82-571-055-01		Jack plate, AC (K model only)	TPR-968	1

EXPLODED VIEW–2



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
2-1	82-551-246-01		Cover, Fuse		1	
2-2	82-563-293-01		Plate 13.5-13.5	TPR-990	1	
2-3	82-533-226-01		Cushion	TPR-935	3	
2-4	87-096-048-01		String, Tuning dial		1	
2-5	82-541-291-01		E-spring, Dial	TPR-950	1	
2-6	82-563-294-01		G-cushion 20-10-22	TPR-990	1	
2-7	82-571-213-01		Drum, Tuning dial	TPR-968	1	
2-8	82-571-250-01		Holder, PCB	TPR-968	1	
2-9	82-551-277-01		Cushion 27-20-10		1	
2-10	82-439-311-01		Joint, Tunign drum	TPR-300	1	
2-11	82-571-650-01		Operation, Remote switch	TPR-968	1	
2-12	82-563-651-01		Wire Remote switch	TPR-990	1	
2-13	81-302-107-01		Roller		3	
2-14	82-439-317-01		Roller	TPR-300	1	
2-15	81-385-014-01		Roller		2	
2-16	82-571-013-01		Pointer, Tuning	TPR-968	1	
2-17	82-592-020-01		Name plate, Tuning dial	*	1	
2-18	87-064-097-01		ECM holder, 30M		2	
2-19	82-592-201-01		Chassis Main	*	1	
2-20	82-571-215-01		Shaft, Tuning	TPR-968	1	
2-21	82-397-314-01		Rubber belt A		1	
2-22	87-040-148-01		Counter		1	
2-23	82-592-012-01		Push-button, DSL	*	1	
2-24	82-592-011-01		Push-button, MS	*	1	
2-25	82-592-010-01		Push-button, REC MUTE	*	1	
2-26	82-592-210-01		Sheet, Fibre	*	1	
2-27	87-038-039-01		Wire binder		1	
2-28	82-592-204-01		Holder, Volume	*	1	
2-29	82-592-041-01		Jack name H	*	1	
2-30	82-592-615-01		Jack plate ass'y H	*	1	
2-31	82-571-651-01		Shield plate IC	TPR-968	1	
2-32	82-563-280-01		Cushion, Battery lid	TPR-990	1	
2-33	87-063-116-01		Cushion 30-15		1	
2-34	82-563-647-01		Shield plate	TPR-990	1	
2-35	82-416-260-01		M-cushion		3	
2-36	82-592-004-01		Push-button, REC	*	1	
2-37	82-592-005-01		Push-button, FWD	*	1	
2-38	82-592-006-01		Push-button, FF	*	1	
2-39	82-592-007-01		Push-button, REW	*	1	
2-40	82-592-008-01		Push-button, STOP	*	1	
2-41	82-592-009-01		Push-button, PAUSE	*	1	
2-42	82-571-233-01		Cloth, Meter	TPR-968	1	

EXPLODED VIEW–3

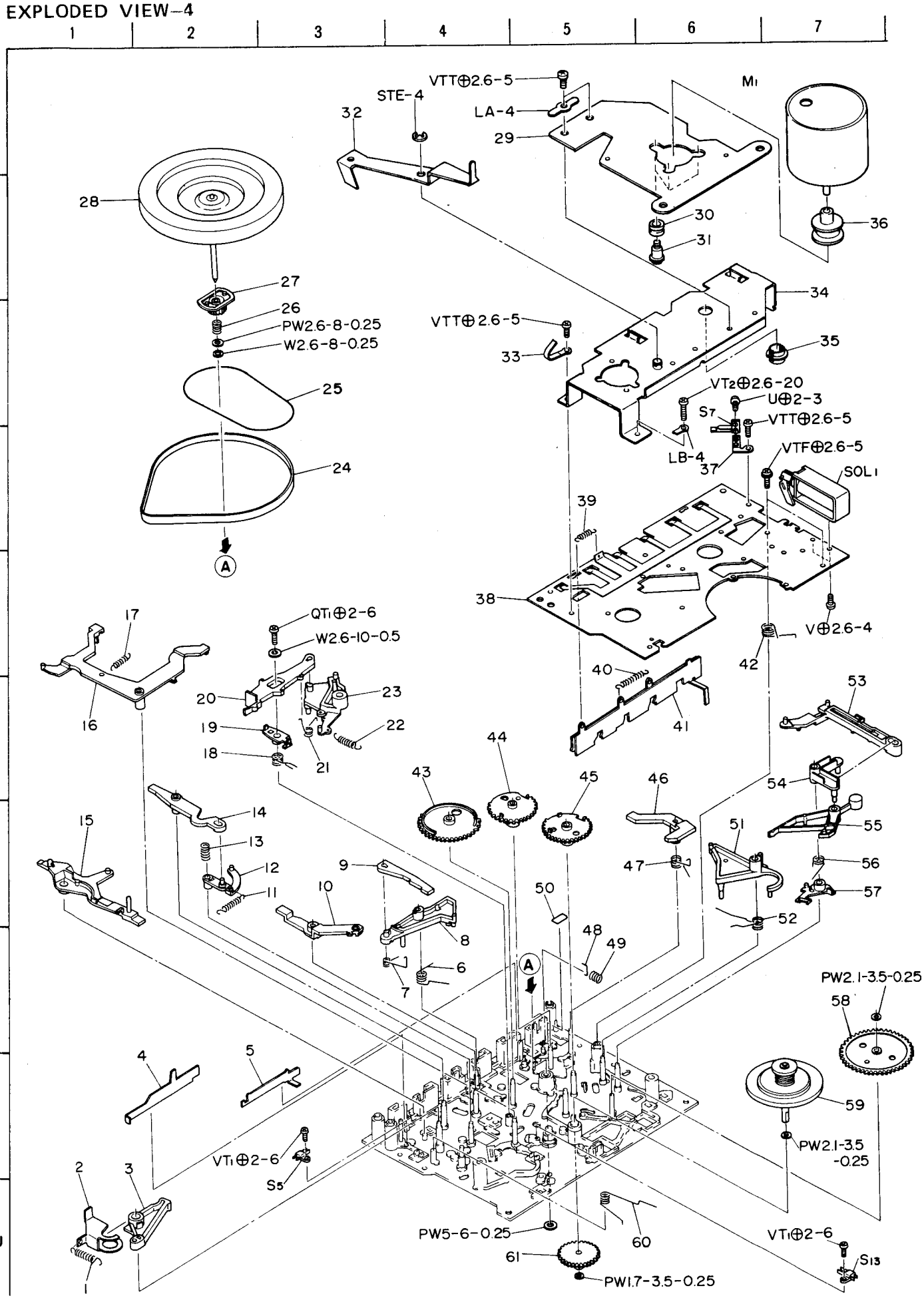


Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
3-1	82-585-361-01		Plate button, PAUSE		1	
3-2	82-585-337-01		Plate button, REC		2	
3-3	82-585-343-01		Plate button, FR A		2	
3-4	82-585-277-01		Plate button, FR		1	
3-5	82-585-325-01		Outsert ass'y		1	
3-6	82-585-255-01		Lever, REC blocking		1	
3-7	82-585-294-01		T-spring, Center shift		1	
3-8	82-585-319-01		P-spring, Cassette holder		1	
3-9	82-585-252-01		Lever, Brake		1	
2-10	82-585-286-01		G-cushion, Brake		2	
3-11	82-585-290-01		C-spring, Back tension		1	
3-12	82-585-215-01		Supply reel platform ass'y		1	
3-13	82-585-292-01		C-spring, Slip disk		1	
3-14	82-585-272-01		Slip disk		1	
3-15	82-585-210-01		Take-up reel platform ass'y		1	
3-16	82-585-231-01		Lever, FR ass'y		1	
3-17	82-585-235-01		Gear, REW A		1	
3-18	82-585-295-01		T-spring, Actuating		1	
3-19	82-585-208-01		Chassis, Actuating		1	
3-20	87-073-005-01		Steel ball, 2ϕ		1	
3-21	82-585-284-01		P-spring, Actuating		1	
3-22	82-585-349-01		Holder, Idler lever		1	
3-23	82-585-209-01		Head, base		1	
3-24	82-585-291-01		C-spring, RPH		1	
3-25	82-591-245-01		Holder Lead wire		1	
3-26	82-588-628-01		Shield plate		1	
3-27	82-588-222-01		Sheet, Foamed 8-15-0.1		1	
3-28	82-585-313-01		E-spring, Play idler		1	
3-29	82-585-223-01		Play idler lever ass'y		1	
3-30	82-585-312-01		E-spring, Brake R		1	
3-31	82-585-253-01		Lever, Brake R		1	
3-32	82-585-265-01		Lever, REV		1	
3-33	82-585-240-01		Pinch lever ass'y		1	
3-34	82-585-296-01		T-spring, Pinch roller		1	
3-35	82-585-254-01		Slide plate, Eject		1	
3-36	82-585-311-01		E-spring, Lid lock		1	
3-37	82-585-338-01		G-cushion, Play lever		1	
3-38	82-585-279-01		Lever, Eject A		1	
3-39	82-585-278-01		Lock plate		1	
3-40	82-585-317-01		E-spring, Button lock		1	

CAUTION

Please refer to service manual for CS-880 in regard to description of the MD-3 mechanism, caution on disassembling MD-3 mechanism, spring allocation position and adjustment method, which are in common with CS-880.

EXPLODED VIEW-4



ELECTRICAL MAIN PARTS LIST

Symbol No.	Part No.	Description
≪TUNER CIRCUIT BOARD SECTION≫		
PCB-A	82-563-682-11	Tuner circuit board
IC1	87-027-285-01	IC, HA-11251
IC2	87-027-430-11	IC, LA3361
Q1	87-026-107-01	FET, 2SK49F1
Q2,3,4,6	89-319-233-01	Transistor, 2SC1923(O)
Q5	89-319-232-01	Transistor, 2SC1923(R)
Q7,8	89-318-155-01	Transistor, 2SC1815(GR)
Q9,13	89-309-455-01	Transistor, 2SC945L(Q)
Q10	89-404-673-01	Transistor, 2SD467(C)
Q11,12	89-318-154-01	Transistor, 2SC1815(Y)
D1	87-017-004-01	Diode, SD117
D2	88-052-188-11	Diode, 1S188(FM)
D3	87-027-431-01	Zener diode, RD6.2E
L1	82-551-675-01	FM antenna coil
L2	87-006-017-01	FM coil, 2¼t
L3	87-007-088-01	FM OSC coil, 2¼t
L4	82-551-679-01	SW antenna coil
L5,6	82-563-669-01	MW/LW bar antenna coil
L7	82-563-665-01	SW OSC coil
L8	82-563-663-01	MW OSC coil
L9	82-563-664-01	LW OSC coil
L10	87-005-134-01	Coil
L11	87-008-209-01	Quad coil
L12	87-005-101-01	FM choke coil, 2.2μH
VC1~5 TC1~4	82-563-678-01	Poly-variable capacitor
TC5,7,8	87-011-099-01	Trimmer, 8P
TC6,9	87-011-088-01	Trimmer, 16P
LPF1	87-030-070-01	Low-pass filter
CF1,2	87-008-169-01	Ceramic filter, FM, 230K
CFT1	82-494-786-01	Ceramic filter transformer
IFT1	87-008-187-01	IFT, AH 468
S2	82-563-661-11	Remote switch (BAND SELECTOR)
SFR1	87-021-570-01	Semi-fixed resistor, 100kΩ-B
SFR2	87-021-566-01	Semi-fixed resistor, 5kΩ-B
PIN-1	87-032-907-01	Pin, 7P
		< Capacitors >
C72	87-014-057-41	1000pF PP
C34	87-014-066-01	2400pF PP
C73,76	87-015-321-01	0.47μF 10V Aluminum solid
C75	87-015-425-01	1μF 25V Aluminum solid
≪MAIN CIRCUIT BOARD SECTION≫		
PCB-B	*	Main circuit board
IC1	87-027-621-01	IC, TA7328A
IC2	87-027-533-11	IC, TA7229P
Q1,2	89-307-325-01	Transistor, 2SC732(G)
Q3,4,5,6, 7,8,9,10, 11,12	89-318-154-01	Transistor, 2SC1815(Y)
Q13	89-318-464-01	Transistor, 2SC1846(R)
Q15,16	89-322-406-01	Transistor, 2SC2240(BL)
D1,2,3,4	88-052-188-11	Diode, 1S188(FM)
D5,6,7,8,10, 11,12,13	87-027-097-01	Diode, 1S1555
D9	87-027-241-01	Zener diode, 05Z9.1L
L1,2	87-005-088-01	Micro inductor coil, 5.6mH
L3,4	87-008-173-01	Bias trap coil
L5	82-401-661-01	Choke coil, 600μH
L7	87-003-039-01	Choke coil, 36μH

Symbol No.	Part No.	Description
CP1	82-570-639-01	Bias OSC unit
J1,2	87-032-741-01	DIN jack, 5P (MIC-REC/PB)
J3,4	87-032-742-01	DIN jack, 2P (EXT-SP)
J5	82-592-615-01	Jack plate ass'y (PHONES)
S1	82-562-604-01	Slide switch (REC/PB)
S3	82-592-608-01	Slide lever switch (FUNCTION)
S4	82-571-642-01	Slide lever switch (TAPE SELECTOR)
S8	82-431-604-01	Slide switch (OSC)
S9	82-571-612-01	Slide lever switch (MODE)
SFR1,2,7	87-021-568-01	Semi-fixed resistor, 20kΩ-B
SFR3,4	87-021-569-01	Semi-fixed resistor, 50kΩ-B
SFR5,6	87-021-570-01	Semi-fixed resistor, 100kΩ-B
PIN2,3	87-032-991-01	Pin, 3P
		< Resistors >
⚠ R208	87-029-015-01	10Ω ¼w Fuse resistor
⚠ R201	87-029-094-01	15Ω ¼w Fuse resistor
⚠ R207	87-029-108-01	1Ω ½w Fuse resistor
		< Capacitors >
C222 220	87-015-480-01	220μF 16V Electrolytic
C217,223	87-015-477-01	470μF 16V Electrolytic
C201	87-015-661-01	1000μF 10V Electrolytic
C65,66,204	87-015-530-01	2200μF 16V Electrolytic
C212,214, 226	87-015-660-01	470μF 10V Electrolytic
C69,70	87-014-051-01	560pF PP
C5,6	87-014-055-01	820pF PP
C33,34,75, 76	87-015-421-01	0.22μF 25V Aluminum solid
C47,48	87-015-425-01	1μF 25V Aluminum solid
≪LED CIRCUIT BOARD SECTION≫		
PCB-C	*	LED circuit board
D1	87-027-542-01	LED, LN217RP
≪DSL CIRCUIT BOARD SECTION≫		
PCB-D	*	DSL circuit board
IC501	87-027-621-01	IC, TA-7328A
Q501,502	89-318-154-01	Transistor, 2SC1815(Y)
D501,502 503,504	87-027-097-01	Diode, 1S1555
D505	87-027-732-01	LED, SG-235D
S10	87-031-662-01	Push-switch (DSL)
		< Capacitors >
C514,515	87-015-318-01	0.1μF 10V Aluminum solid
C512,513	87-015-320-01	0.33μF 10V Aluminum solid
≪MS CIRCUIT BOARD SECTION≫		
PCB-E	*	MS circuit board
IC401	87-027-762-01	IC, M51143L
Q401,402,403, 404,405,406	89-318-154-01	Transistor, 2SC1815(Y)
Q407	89-309-456-01	Transistor, 2SC945L(P)
Q408	89-106-834-51	Transistor, 2SA683(RS)
D401	87-027-097-01	Diode, 1S1555
D402	87-027-228-01	Zener diode, 05Z7.5U
D403	87-027-625-01	Zener diode, 05Z6.8U
D404	87-027-365-01	Diode, S5277B
D405	87-027-731-01	LED, SR-535D
S11	87-031-532-01	Push-switch (REC MUTE)
S12	87-031-662-01	Push-switch (MS)

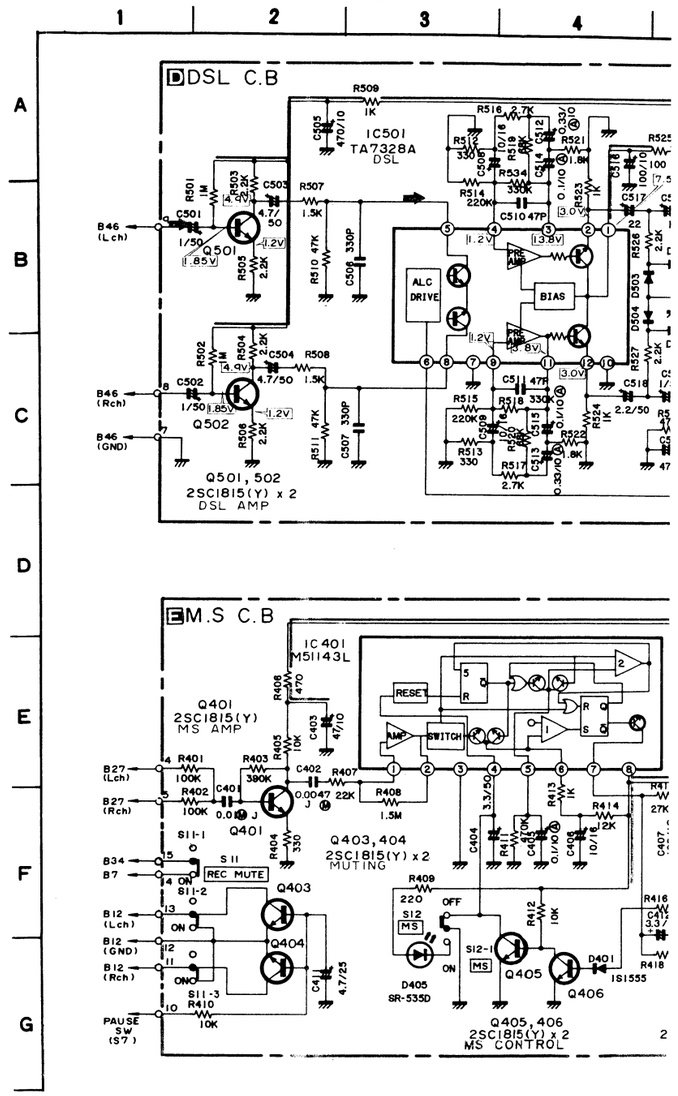
Symbol No.	Part No.	Description
		< Capacitor >
C405	87-015-318-01	0.1μF 10V Aluminum solid
≪POWER CIRCUIT BOARD SECTION≫		
⚠ PCB-F	82-551-672-21	Power circuit board
D14	87-027-609-01	Encapsulated diode
⚠ J6	87-049-010-01	AC jack
⚠ S14	87-031-466-01	Slide switch (VOLTAGE SELECTOR)
⚠ F1	87-035-080-01	Fuse, "T" 160mA
	87-098-008-01	Fuse label, "T" 160mA
⚠ F2	87-035-177-01	Fuse, 2.5A
	87-098-199-01	Fuse label, 2.5A
⚠	87-033-147-01	Fuse clamp
		< Resistor >
R222	87-025-194-01	220Ω 2W Metal film resistor
		< Capacitor >
C228	87-335-330-01	3300μF 16V Electrolytic
≪VOLUME CIRCUIT BOARD SECTION≫		
PCB-G	82-592-602-01	Volume circuit board
VR1,2,3,4	87-021-668-01	Volume, 50kΩ-A (TREBLE, BASS)
VR5,6	87-021-667-01	Volume, 20kΩ-A (VOLUME)
VR7	87-021-669-01	Volume, 100kΩ-W (BALANCE)
		< Capacitors >
C41,42,45,46	87-015-427-01	0.15μF 25V Aluminum solid
C35,36	87-015-421-01	0.22μF 25V Aluminum solid
≪MISCELLANEOUS≫		
⚠ T1	82-571-657-01	Power transformer (E model only)
⚠ T1	82-571-658-01	Power transformer (K model only)
RPH	87-046-159-01	REC/PB head
EH	87-046-189-01	Erase head
ECM1,2	87-041-018-01	ECM, WH-034AY
M1	87-045-135-01	Motor, DC-EG
LM1,2	82-592-606-01	Level meter
SP1,2	82-571-644-01	Speaker, Woofer
SP3,4	82-571-645-01	Speaker, Tweeter
SOL1	82-588-603-21	Solenoid ass'y
S5	87-031-548-01	Leaf switch (MOTOR)
S6	87-031-537-01	Micro switch (TAPE POWER)
S7	87-031-361-01	Leaf switch (PAUSE MUTE)
S13	87-031-649-01	Leaf switch (CUE/REV)
CON-2	82-571-643-01	Connector ass'y, 3P
CON-3	82-571-616-01	Connector ass'y, 3P
CON-1	82-571-648-01	Connector ass'y, 7P
		< Capacitor >
C1,2	87-015-624-01	4.7μF 50V Electrolytic BP

⚠ This symbol is given to important part which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

Note; Combination Circuit Board

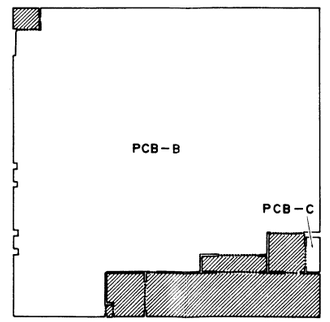
The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

SCHEMATIC DIAGRAM–1



Combination circuit board A 82-592-612-01

Combination



Symbol No.	Part No.	Description
CP1	82-570-639-01	Bias OSC unit
J1,2	87-032-741-01	DIN jack, 5P (MIC-REC/PB)
J3,4	87-032-742-01	DIN jack, 2P (EXT-SP)
J5	82-592-615-01	Jack plate ass'y (PHONES)
S1	82-562-604-01	Slide switch (REC/PB)
S3	82-592-608-01	Slide lever switch (FUNCTION)
S4	82-571-642-01	Slide lever switch (TAPE SELECTOR)
S8	82-431-604-01	Slide switch (OSC)
S9	82-571-612-01	Slide lever switch (MODE)
SFR1,2,7	87-021-568-01	Semi-fixed resistor, 20kΩ-B
SFR3,4	87-021-569-01	Semi-fixed resistor, 50kΩ-B
SFR5,6	87-021-570-01	Semi-fixed resistor, 100kΩ-B
PIN2,3	87-032-991-01	Pin, 3P
		< Resistors >
⚠ R208	87-029-015-01	10Ω ¼w Fuse resistor
⚠ R201	87-029-094-01	15Ω ¼w Fuse resistor
⚠ R207	87-029-108-01	1Ω ½w Fuse resistor
		< Capacitors >
C222 220	87-015-480-01	220μF 16V Electrolytic
C217,223	87-015-477-01	470μF 16V Electrolytic
C201	87-015-661-01	1000μF 10V Electrolytic
C65,66,204	87-015-530-01	2200μF 16V Electrolytic
C212,214, 226	87-015-660-01	470μF 10V Electrolytic
C69,70	87-014-051-01	560pF PP
C5,6	87-014-055-01	820pF PP
C33,34,75, 76	87-015-421-01	0.22μF 25V Aluminum solid
C47,48	87-015-425-01	1μF 25V Aluminum solid
≪LED CIRCUIT BOARD SECTION≫		
PCB-C	*	LED circuit board
D1	87-027-542-01	LED, LN217RP
≪DSL CIRCUIT BOARD SECTION≫		
PCB-D	*	DSL circuit board
IC501	87-027-621-01	IC, TA-7328A
Q501,502	89-318-154-01	Transistor, 2SC1815(Y)
D501,502 503,504	87-027-097-01	Diode, 1S1555
D505	87-027-732-01	LED, SG-235D
S10	87-031-662-01	Push-switch (DSL)
		< Capacitors >
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C512,513	87-015-320-01	0.33μF 10V Aluminum solid
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Q408	89-106-834-51	Transistor, 2SA683(RS)
D401	87-027-097-01	Diode, 1S1555
D402	87-027-228-01	Zener diode, 05Z7.5U
D403	87-027-625-01	Zener diode, 05Z6.8U
D404	87-027-365-01	Diode, S5277B
D405	87-027-731-01	LED, SR-535D
S11	87-031-532-01	Push-switch (REC MUTE)
S12	87-031-662-01	Push-switch (MS)

Symbol No.	Part No.	Description
		< Capacitor >
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⚠ PCB-F	82-551-672-21	Power circuit board
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⚠ J6	87-049-010-01	AC jack
⚠ S14	87-031-466-01	Slide switch (VOLTAGE SELECTOR)
⚠ F1	87-035-080-01	Fuse, "T" 160mA
	87-098-008-01	Fuse label, "T" 160mA
⚠ F2	87-035-177-01	Fuse, 2.5A
	87-098-199-01	Fuse label, 2.5A
⚠	87-033-147-01	Fuse clamp
		< Resistor >
R222	87-025-194-01	220Ω 2W Metal film resistor
		< Capacitor >
C228	87-335-330-01	3300μF 16V Electrolytic
≪VOLUME CIRCUIT BOARD SECTION≫		
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VR1,2,3,4	87-021-668-01	Volume, 50kΩ-A (TREBLE, BASS)
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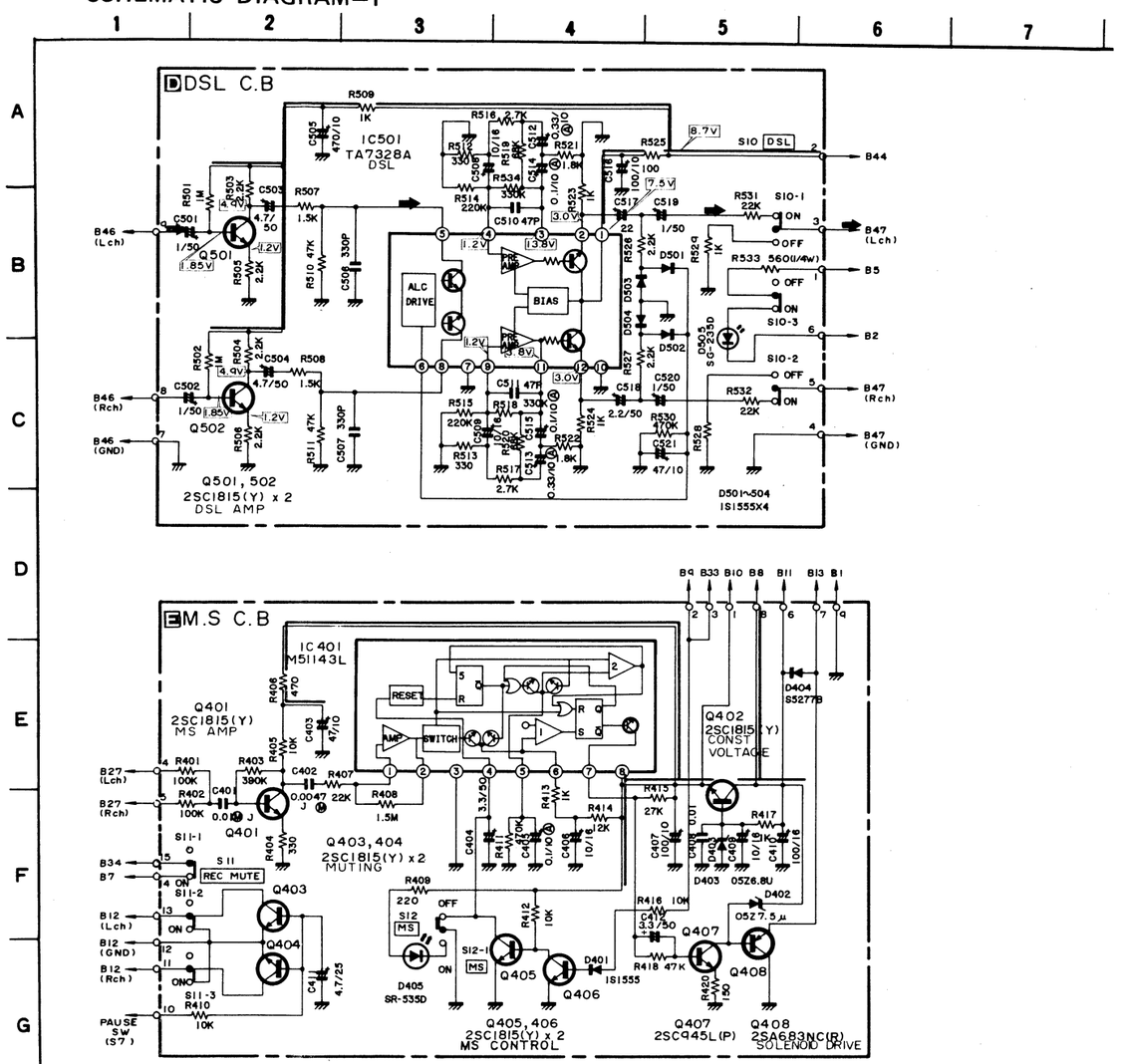
		< Capacitors >
C41,42,45,46	87-015-427-01	0.15μF 25V Aluminum solid
C35,36	87-015-421-01	0.22μF 25V Aluminum solid
≪MISCELLANEOUS≫		
⚠ T1	82-571-657-01	Power transformer (E model only)
⚠ T1	82-571-658-01	Power transformer (K model only)
RPH	87-046-159-01	REC/PB head
EH	87-046-189-01	Erase head
ECM1,2	87-041-018-01	ECM, WH-034AY
M1	87-045-135-01	Motor, DC-EG
LM1,2	82-592-606-01	Level meter
SP1,2	82-571-644-01	Speaker, Woofer
SP3,4	82-571-645-01	Speaker, Tweeter
SOL1	82-588-603-21	Solenoid ass'y
S5	87-031-548-01	Leaf switch (MOTOR)
S6	87-031-537-01	Micro switch (TAPE POWER)
S7	87-031-361-01	Leaf switch (PAUSE MUTE)
S13	87-031-649-01	Leaf switch (CUE/REV)
CON-2	82-571-643-01	Connector ass'y, 3P
CON-3	82-571-616-01	Connector ass'y, 3P
CON-1	82-571-648-01	Connector ass'y, 7P
		< Capacitor >
C1,2	87-015-624-01	4.7μF 50V Electrolytic BP

⚠ This symbol is given to important part which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

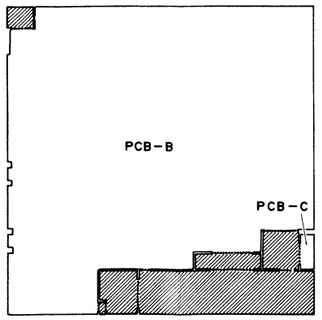
Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

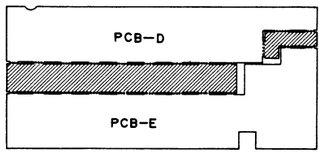
SCHEMATIC DIAGRAM–1



Combination circuit board A 82-592-612-01

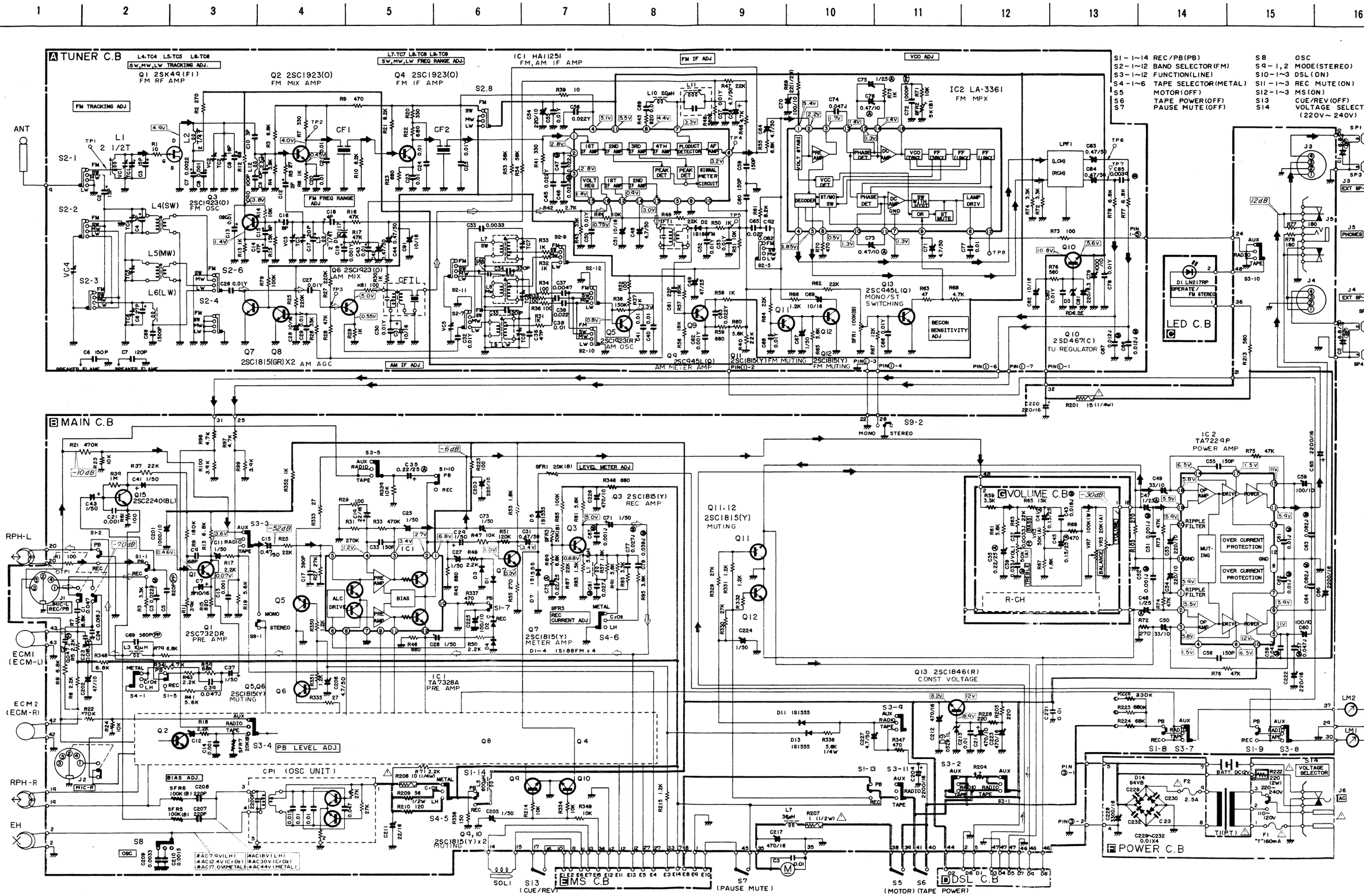


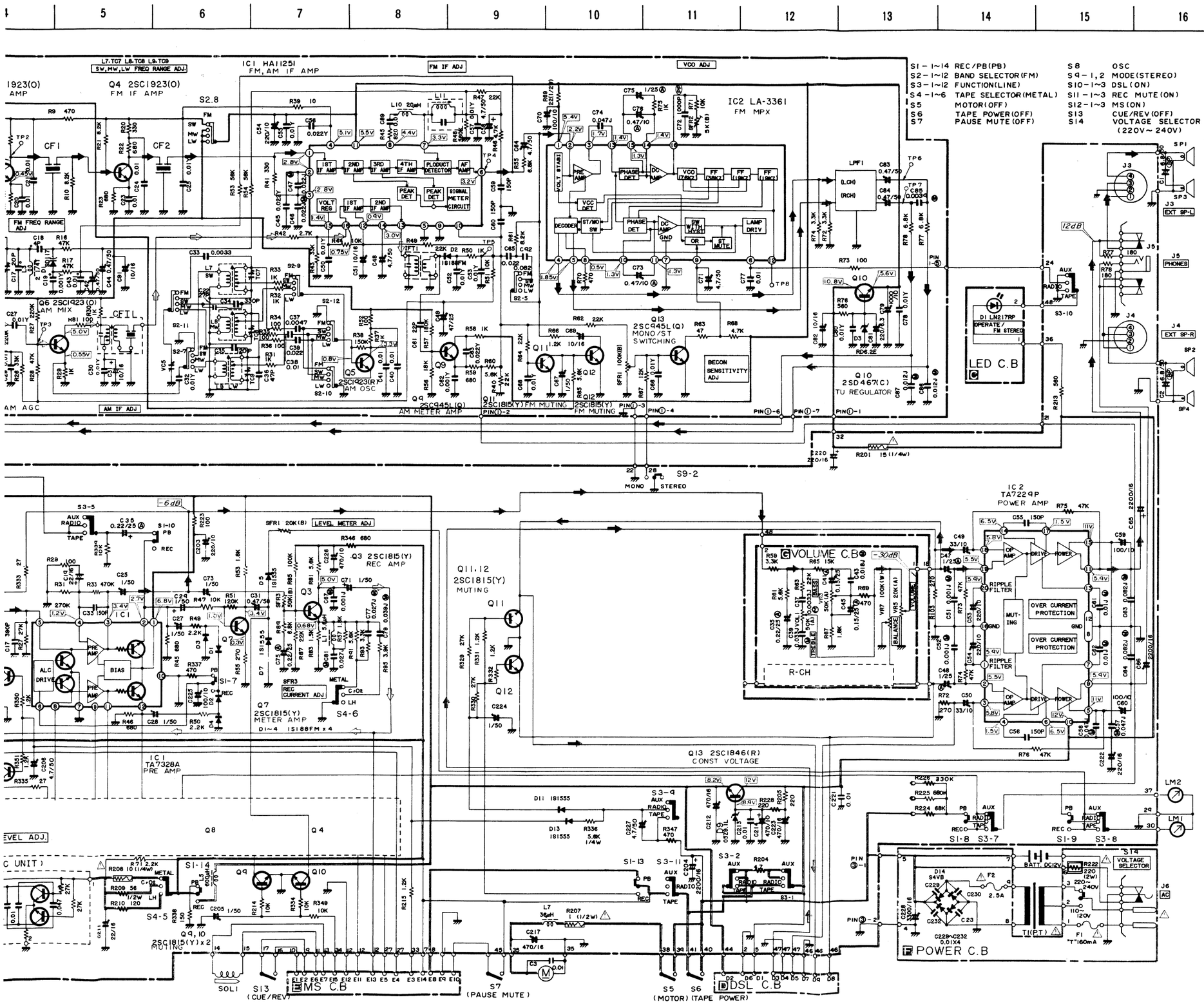
Combination circuit board B 82-592-605-01



CS-660E,K
CS-660E,K

SCHEMATIC DIAGRAM–2



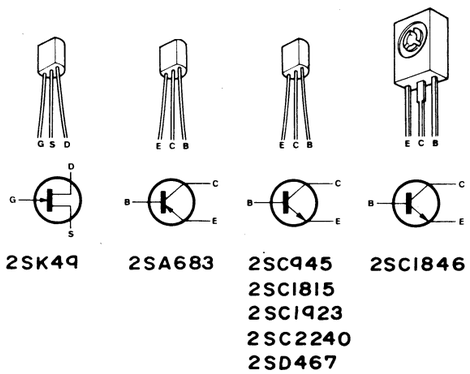


NOTES:

1) ■ B (+) power supply
2) ➡ Signal path
   ⇨ Rec path, AM signal path.
3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals.
   But ( ) is with AM reception or recording.
   An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
4) Resistors with no designation have a rated power of 1/4W and a tolerance of ±5%.
5) Capacitors with no designation have a dielectirc strneght of less than 50WV.
6) The only capacitor tolerance indicated are ±5% (J) and ±10% (K).
7) Ceramic capacitor symbols:
   ⊣⊢ For temperature compensation (SL)
   ⊣⊢ High dielectric constant system (YY)
   ⊣⊢ High dielectric constant system (YW, YP, YZ)
8) Explanation of symbols
   (M) Mylar capacitor
   (A) Aluminum solid capacitor
   (PP) Polypropylene film capacitor
   (BP) Bi-polarized capacitor
   Fuse resistor
   Nonflammable resistor

⚠ Safety component symbol
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- This schematic diagram is subject to change without notice in the interests of improved performance.



AIWA

WIRING–1

NOTES (1) B(+) Pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) wh
An asterisk (*) indicates that the value was measured with a vacuum-tube voltm

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A B C D E F G H I J

7. Bias Frequency Adjustment
Settings:
- FUNCTION switch: TAPE
- TAPE SELECTOR switch: LH
- OSC switch: Center (1) position
- Test point: TP1 (L-ch), TP2 (R-ch)
- Adjustment location: Bias osc unit

Method:
Adjust BIAS OSC Unit so that the frequency becomes 61 ± 0.3 kHz.

9. Bias Current Adjustment
Settings:
- TAPE SELECTOR switch: CrO_2
- Adjustment locations: SFR5 (L-ch), SFR6 (R-ch)

For others, proceed as for Bias Frequency Adjustment
Method:
Adjust SFR5, 6 so that the voltage becomes 56 mV. (560 μA)
Ratings: 56 mV ± 0.5 dB
LH tape: 42 mV (420 μA) ± 1 dB
METAL tape: 78 mV (780 μA) ± 1 dB

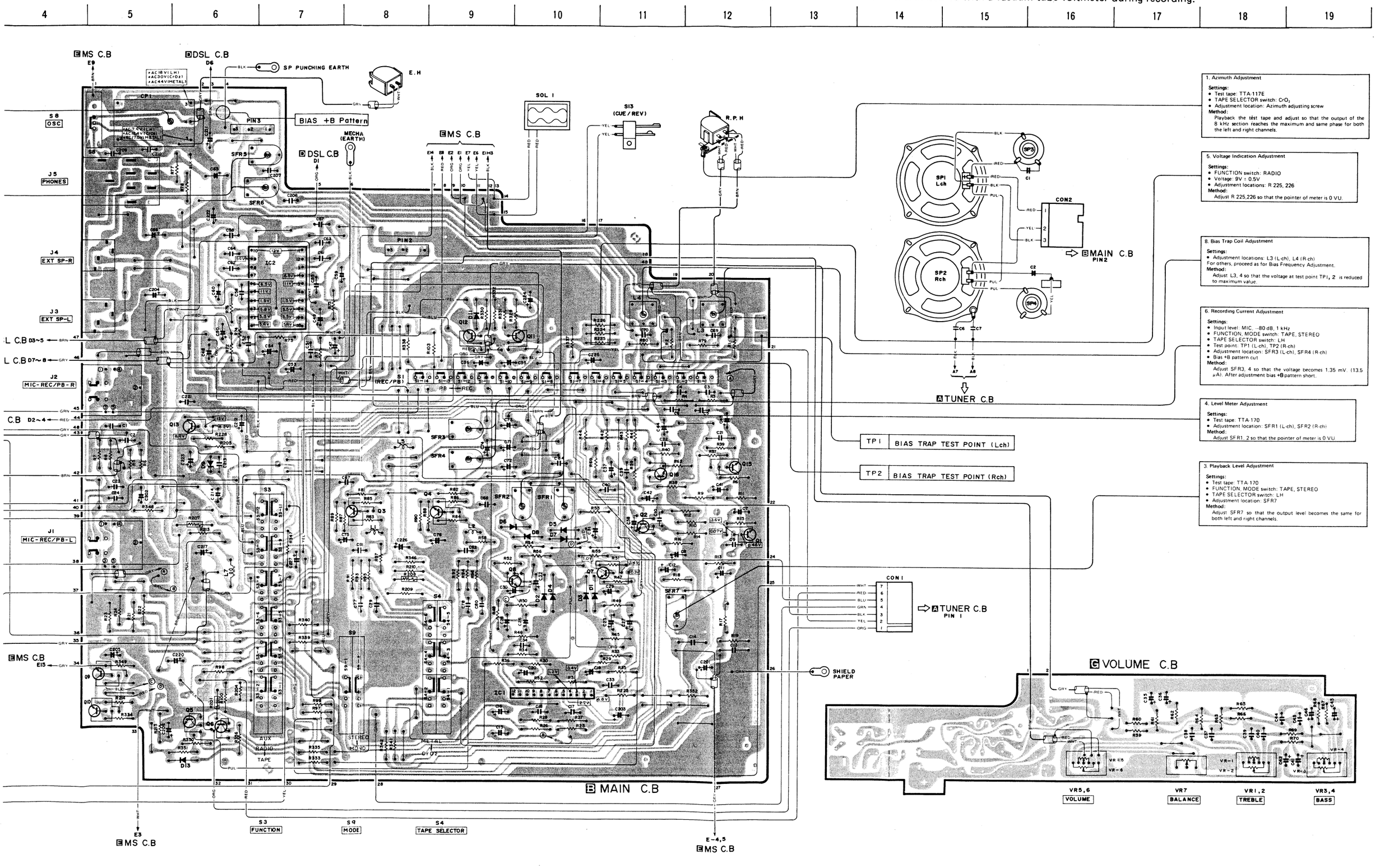
2. Tape Speed Adjustment
Settings:
- Test tape: TTA-111S
- Adjustment location: SFR of motor

Method
Adjust SFR so that the frequency is 3 kHz ± 10 Hz.

EMS C.B
DDSL C.B
SP PUNCHING EARTH
E.H
SOL 1
S13 (CUE / REV)
R.P.H
BIAS +B Pattern
MECHA (EARTH)
S8 OSC
J5 PHONES
J4 EXT SP-R
J3 EXT SP-L
J2 MIC-REC/PB-R
J1 MIC-REC/PB-L
ECM1 (ECM-L)
ECM2 (ECM-R)
DDSL C.B D3~5
DDSL C.B D7~8
DDSL C.B D2~4
CLED C.B
OPERATE / FM STEREO
S7 (PAUSE MUTE)
EMS C.B E10
S6 (TAPE POWER)
S5 (MOTOR)
M1
EMS C.B E15
(VU-R, TUNING) LM2
(VU-L, BATT) LM1
SP1 Lch
SP2 Rch
SP3
SP4
CON2
ATUNER C.B
TP1 BIAS TRAP TEST POINT (Lch)
TP2 BIAS TRAP TEST POINT (Rch)
CON1
ATUNER C.B PIN 1
SHIELD PAPER
BMAIN C.B
VR5 VOLUM
S1 (REC/PB)
S3 FUNCTION
S9 MODE
S4 TAPE SELECTOR
E3 EMS C.B
E-4,5 EMS C.B

NOTES (1) B(+) Pattern Others pattern

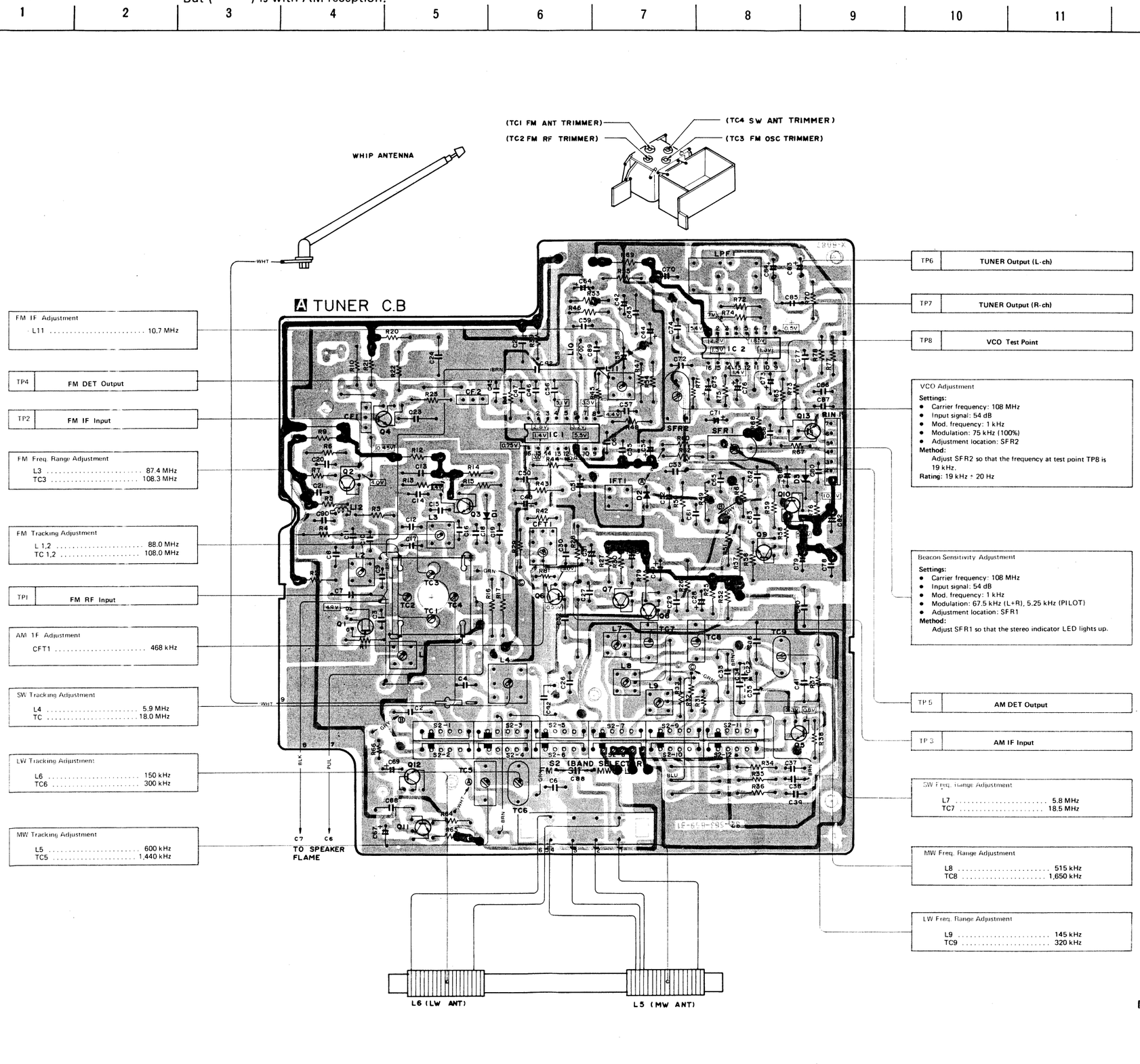
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.


4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
E MS C.B
D DSL C.B
SP PUNCHING EARTH
E.H
SOL 1
SI3 (CUE/REV)
R.P.H
MECHA (EARTH)
BIAS +B Pattern
S8 OSC
J5 PHONES
J4 EXT SP-R
J3 EXT SP-L
J2 MIC-REC/PB-R
J1 MIC-REC/PB-L
L C.B D3~5
L C.B D7~8
C.B D2~4
E MS C.B E15
E MS C.B E3
S3 FUNCTION
S9 MODE
S4 TAPE SELECTOR
E-4,5 E MS C.B
B MAIN C.B
SP1 Lch
SP2 Rch
SP3
SP4
CON2
B MAIN C.B PIN2
A TUNER C.B
TP1 BIAS TRAP TEST POINT (Lch)
TP2 BIAS TRAP TEST POINT (Rch)
CON1
A TUNER C.B PIN 1
SHIELD PAPER
C VOLUME C.B
VR5,6 VOLUME
VR7 BALANCE
VR1,2 TREBLE
VR3,4 BASS
1. Azimuth Adjustment
Settings:
• Test tape: TTA-117E
• TAPE SELECTOR switch: CrO2
• Adjustment location: Azimuth adjusting screw
Method:
Playback the test tape and adjust so that the output of the 8 kHz section reaches the maximum and same phase for both the left and right channels.
5. Voltage Indication Adjustment
Settings:
• FUNCTION switch: RADIO
• Voltage: 9V ± 0.5V
• Adjustment locations: R 225, 226
Method:
Adjust R 225,226 so that the pointer of meter is 0 VU.
8. Bias Trap Coil Adjustment
Settings:
• Adjustment locations: L3 (L-ch), L4 (R-ch)
For others, proceed as for Bias Frequency Adjustment.
Method:
Adjust L3, 4 so that the voltage at test point TP1, 2 is reduced to maximum value.
6. Recording Current Adjustment
Settings:
• Input level: MIC, −80 dB, 1 kHz
• FUNCTION, MODE switch: TAPE, STEREO
• TAPE SELECTOR switch: LH
• Test point: TP1 (L-ch), TP2 (R-ch)
• Adjustment location: SFR3 (L-ch), SFR4 (R-ch)
• Bias +B pattern cut
Method:
Adjust SFR3, 4 so that the voltage becomes 1.35 mV. (13.5 μA). After adjustment bias +B pattern short.
4. Level Meter Adjustment
Settings:
• Test tape: TTA-170
• Adjustment location: SFR1 (L-ch), SFR2 (R-ch)
Method:
Adjust SFR1, 2 so that the pointer of meter is 0 VU.
3. Playback Level Adjustment
Settings:
• Test tape: TTA-170
• FUNCTION MODE switch: TAPE, STEREO
• TAPE SELECTOR switch: LH
• Adjustment location: SFR7
Method:
Adjust SFR7 so that the output level becomes the same for both left and right channels.

CS-660E,K CS-660E,K

NOTES (1) B(+) Pattern Component side pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But ( ) is with AM reception.

WIRING–2



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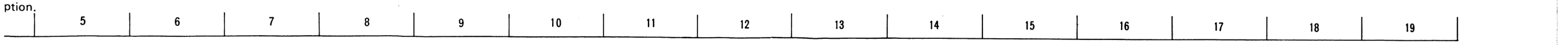
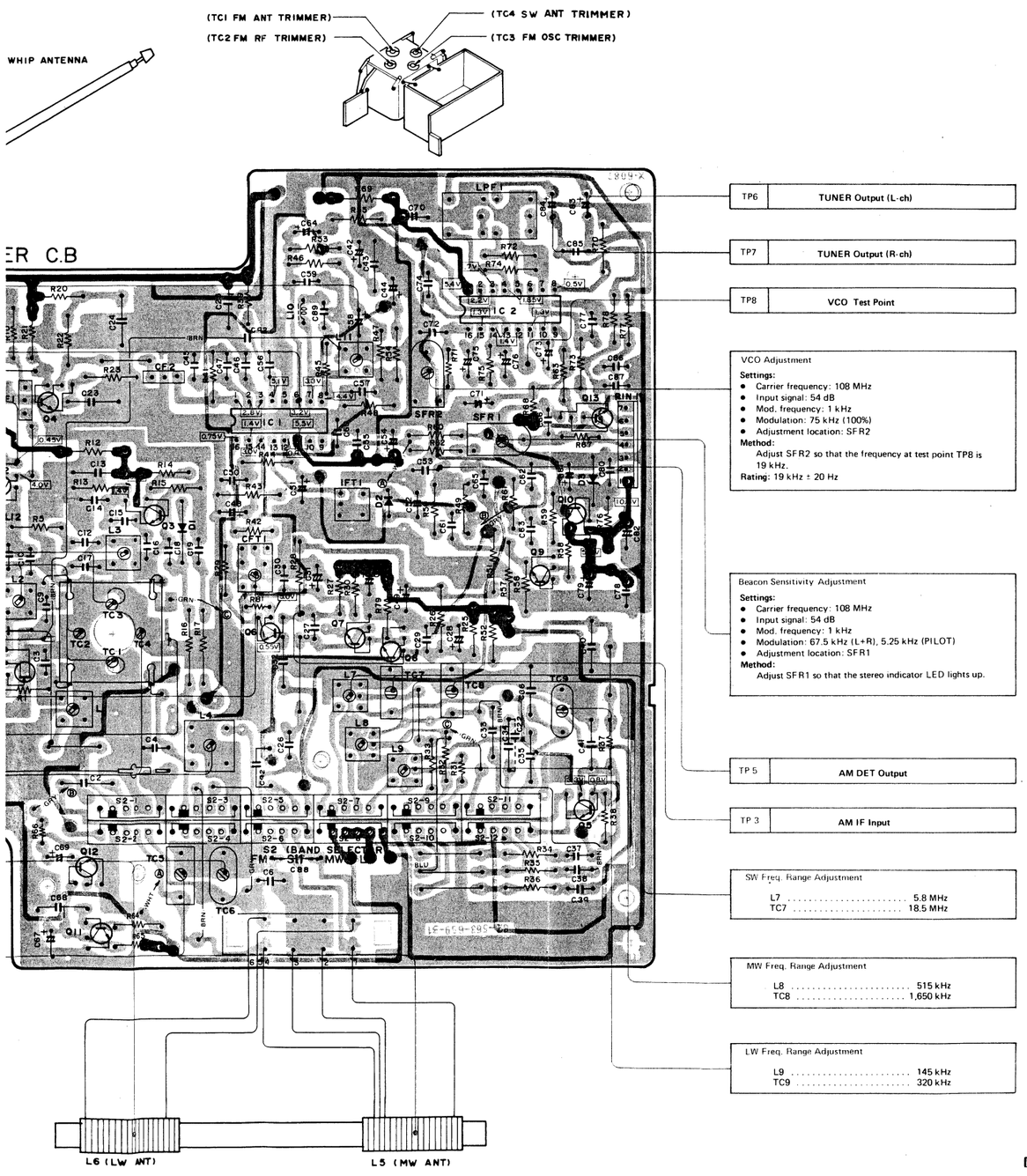




TP6	TUNER Output (L-ch)
TP7	TUNER Output (R-ch)
TP8	VCO Test Point

VCO Adjustment
Settings:
- Carrier frequency: 108 MHz
- Input signal: 54 dB
- Mod. frequency: 1 kHz
- Modulation: 75 kHz (100%)
- Adjustment location: SFR2

Method:
Adjust SFR2 so that the frequency at test point TP8 is 19 kHz.
Rating: 19 kHz ± 20 Hz

Beacon Sensitivity Adjustment
Settings:
- Carrier frequency: 108 MHz
- Input signal: 54 dB
- Mod. frequency: 1 kHz
- Modulation: 67.5 kHz (L+R), 5.25 kHz (PILOT)
- Adjustment location: SFR1

Method:
Adjust SFR1 so that the stereo indicator LED lights up.

TP5	AM DET Output
TP3	AM IF Input

SW Freq. Range Adjustment

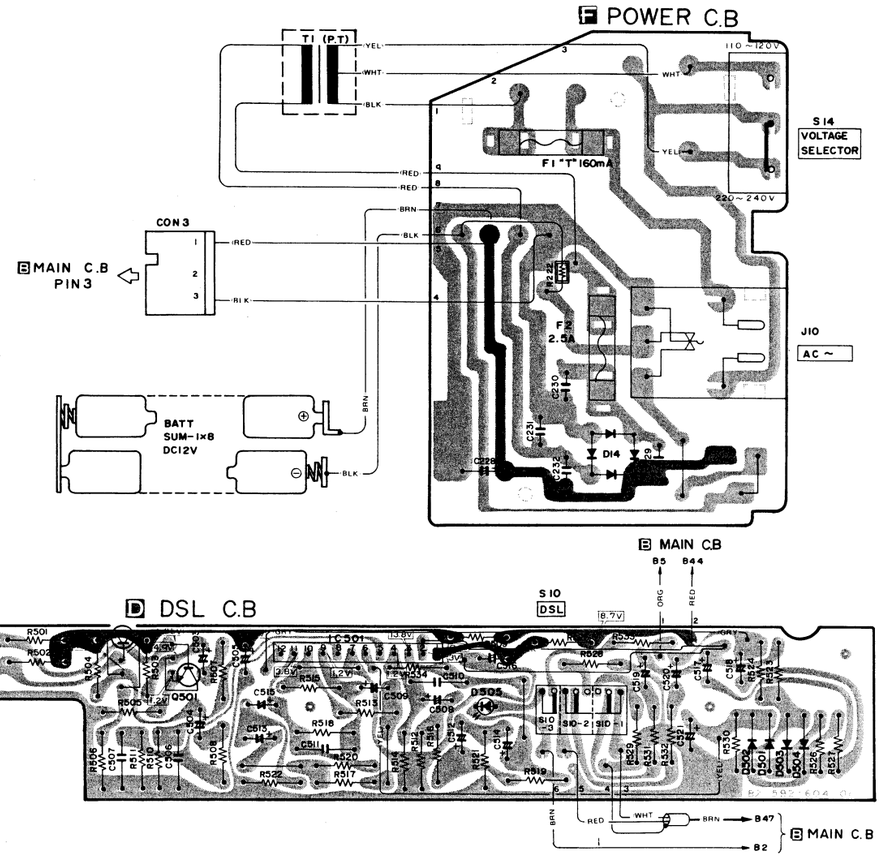
L7	5.8 MHz
TC7	18.5 MHz

MW Freq. Range Adjustment

L8	515 kHz
TC8	1,650 kHz

LW Freq. Range Adjustment

L9	145 kHz
TC9	320 kHz



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
4-1	82-585-314-01		E-spring, REC		1	
4-2	82-585-267-01		Lever, REC B		1	
4-3	82-585-266-01		Lever, REC A		1	
4-4	82-585-282-01		Slide plate, Motor switch		1	
4-5	82-585-283-01		Slide plate, FR auto		1	
4-6	82-585-306-01		T-spring, PLAY lever		1	
4-7	82-585-307-01		T-spring, REC lever		1	
4-8	82-585-249-01		Lever, PLAY		1	
4-9	82-585-250-01		Lever, REC drive		1	
4-10	82-585-258-01		Trigger lever, PLAY		1	
4-11	82-585-308-01		E-spring, REW lever		1	
4-12	82-585-260-01		Lever, REW		1	
4-13	82-439-369-01		Slip, spring	TPR-300	1	
4-14	82-585-259-01		Trigger lever, REW		1	
4-15	82-585-261-01		Trigger lever, REC		1	
4-16	82-585-257-01		Trigger lever, FF		1	
4-17	82-585-301-01		E-spring, Trigger PLAY		1	
4-18	82-585-297-01		T-spring, FR lever A		1	
4-19	82-585-264-01		Lever, FR D		1	
4-20	82-585-263-01		Lever, FR C		1	
4-21	82-585-298-01		T-spring, FR lever B		1	
4-22	82-585-262-01		E-spring, Lid lock		1	
4-23	82-585-287-01		Lever, FR B		1	
4-24	82-585-287-11		Rubber belt, Flywheel		1	
4-25	82-585-336-01		Rubber belt, FR B		1	
4-26	82-585-368-01		C-spring, Flywheel		1	
4-27	82-585-243-01		Gear, Flywheel		1	
4-28	82-585-367-01		Flywheel B ass'y		1	
4-29	82-592-205-01		Bracket, Motor		1	
4-30	87-087-029-01		Rubber cushion		3	
4-31	87-081-483-01		M2.6, Motor screw		3	
4-32	82-592-211-01		Lever, REC E		1	
4-33	87-038-039-01		Wire binder		1	
4-34	82-592-209-01		Holder, Motor ass'y		1	
4-35	82-585-326-01		thrust bearing		1	
4-36	82-585-242-01		Motor pulley		1	
4-37	82-585-323-01		Holder, PAUSE switch		1	
4-38	82-585-203-01		Mechanism chassis B ass'y		1	
4-39	82-175-289-01		E-spring, Slide plate		1	
4-40	82-585-332-01		E-spring, REC lock		1	
4-41	82-585-327-01		Slide plate key ass'y		1	
4-42	82-585-321-01		T-spring, Auto kick		1	
4-43	82-585-244-01		Gear, PLAY cam		1	
4-44	82-585-246-01		Gear, PAUSE cam		1	
4-45	82-585-245-01		Gear, FR cam		1	
4-46	82-585-256-01		Trigger lever, PAUSE		1	
4-47	82-585-304-01		T-spring, Trigger PAUSE		1	
4-48	82-585-362-01		Shaft lock B		1	
4-49	82-585-285-01		C-spring, Lock		1	
4-50	82-585-357-01		Mylar, 4 x 6 x 0.1		1	
4-51	82-585-248-01		Lever, PAUSE		1	
4-52	82-585-300-01		T-spring, FR cam		1	
4-53	82-585-359-01		Plate, Auto kick ass'y		1	
4-54	82-585-269-01		Lever, Auto B		1	
4-45	82-585-268-01		Lever, Auto A		1	
4-56	82-585-299-01		T-spring, Auto eject		1	
4-57	82-585-271-01		Lever, Auto eject		1	
4-58	82-585-247-01		Gear, Auto kick		1	
4-59	82-585-217-01		FR slip pulley ass'y		1	
4-60	82-585-303-01		T-spring, Trigger REC		1	
4-61	82-585-216-01		Gear, Drive		1	

ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Chabged to	Description	Common Model	Q'ty	
1	82-592-855-01		Printed indiv., Packing	*	1	
2	82-592-852-01		Cushion L, Printed indiv.	*	1	
3	82-592-853-01		Cushion R, Printed indiv.	*	1	
4	87-056-615-01		Poly-vinyl sack		1	
5	87-051-137-11		Poly-vinyl sack		1	
6a	82-592-906-01		Instruction booklet (E model only)	*	1	
6b	82-592-907-01		Instruction booklet (K model only)	*	1	
7	87-051-171-11		Poly-vinyl sack		1	
8	87-056-008-11		Label, AC power cord (K model only)		1	
9	87-056-009-41		Distributors list		1	
10	87-056-016-01		Tag, Main voltage (K model only)		1	
11	82-916-750-01		Tape cassette, DMC-165		1	
12a	87-034-883-01		AC power cord (E model only)		1	
12b	87-034-871-01		AC power cord (K model only)		1	